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MEASUREMENTS OF HUMAN CRANIA

To THE EDITOR OF SCIENCE: For many years students of physical anthropology have been handicapped by the lack of reliable cranial measurements from the American area. The National Museum in Washington and several other museums contain rich collections of crania, but no satisfactory measurements of these have been published.

After some discussion of the situation with Dr. Aleš Hrdlička, curator of physical anthropology at the National Museum, and correspondence with the secretary of the Smithsonian Institution, a plan has finally been adopted by which the large collections in Washington will soon be made available. Measurements of the entire series of human crania will be made under Dr. Hrdlička's direction and published in the form of a catalog which will be issued in parts in the Proceedings of the U. S. National Museum. It is expected that several parts will be printed each year, the first being already in press.

It is to be hoped that other museums will now follow the lead, and that in this way the large mass of materials which they contain for the study of the physical anthropology of the American Indian will, in similar fashion, be made available for students.

ROLAND B. DIXON

HARVARD UNIVERSITY,
SEPTEMBER 15, 1922

BIBLIOGRAPHY AND RESEARCH

To THE EDITOR OF SCIENCE: A clearer portrait of the "book sciences" than that in Mr. W. W. Bishop's "The Record of Science," I have never seen in the ten years that I have been engaged in library work.

Many of the thoughts expressed in Mr. Bishop's address have been uppermost in the minds of many of the directors of the laboratories of book science, if I may be permitted to borrow Mr. Bishop's phrase. Many of us have seen this college and that college, this large concern and that large industry, endowed with munificent funds for research. In 1920-1921 there appeared in our leading index to technical periodicals over 100 titles relating to

research work. The National Research Council has published a second edition of "Research Laboratories in Industrial Establishments in the United States," listing some 526 industrial houses operating laboratories devoted to research in one form or another. The same institution later published a list of the sums invested in research fellowships and endowments. The total endowments and fellowships amounted to 565, representing, in round numbers, over \$22,000,000.

Now Mr. Bishop has pointed out that bibliography is the *foundation* of research. Yet I fail to find any specified sum set aside for a well equipped laboratory of book sciences. I doubt if 50 per cent. of these 526 industrial concerns supporting laboratories own and operate respectable laboratories for research in facts, or as I choose to call these libraries, laboratories for "research fact-oring." In fact, I know of one organization that spent over \$400,000 for a research laboratory and yet in its laboratory for research fact-oring, it did not invest one tenth of that amount.

Now, then, why not promote sentiment for the establishment of endowments for research laboratories in "fact-oring" and fellowships in book sciences?

K. C. WALKER

AN UNUSUAL SOLITAIRE GAME

DEAL at random 25 cards from a pack of 52 playing cards and arrange them in five complete poker hands any one of which may be a flush (such as any five hearts), a straight (such as 3, 4, 5, 6, 7, or Ace, K, Q, J, 10, not necessarily of one suit), or a full-house (three of one kind and two of another).

Various persons have tried this solitaire several hundred times and worked it without finding a single case of failure, occasionally after many attempts. It was believed that it would always succeed. After some reflection, the writer invented the following impossible deal:

Diamonds: 2, 7, Q.

Hearts: 3, 4, 9, Q, K.

Clubs: 1, 3, 5, 6, 7, 8, 10, J.

Spades: 1, 2, 4, 6, 8, 9, 10, J, K.

with exactly two of each kind, excepting the

single 5. Since there are not three of a kind, there can not be formed a full-house. But how are we to be certain that we can not make five flushes and straights with these 25 cards? We can not examine the more than 5,194 billions of ways of arranging the 25 cards into five sets of five each, not distinguishing the order of the cards in a set or the order of the sets. We shall resort to the following conclusive analysis:

Since there are only three diamonds, no one of them occurs in a flush, and they are too far apart for two of them to occur in a straight. Hence 2d, 7d, Qd occur in three separate straights.

First, let both 3h and 4h occur in a straight with 2d, and hence with 5c, the only 5. Since there is no 5 left to go in a straight with 3c or with 2s, there is a flush of clubs and a flush of spades. These with the three straights mentioned must exhaust the 25 cards. But Qh is too far from 2d or 7d to be in a straight with one of them, nor can it be in a straight with another queen, Qd, nor in a flush of clubs or spades.

Second, let either 3h or 4h be not in a straight with 2d, and hence not in another straight (since a new 5 is lacking). Thus either 3h or 4h lies in a flush, containing all our five hearts. Since 2s can not occur in a straight (5 lacking), there is a flush of spades. Hence we have these two flushes and the three straights containing 2d, 7d, Qd. But 7c can not occur in one of these five poker hands.

This completes the proof that the above 25 cards can not be arranged in five complete poker hands.

L. E. DICKSON

SCIENCE IN FICTION

To THE EDITOR OF SCIENCE: I am getting up a little catalog of fiction on scientific themes and should like the help of SCIENCE readers. Such books belong mostly to four classes:

(1) Fantastic and futuristic fiction, such as Jules Verne's "Twenty Thousand Leagues Under the Sea" (submarine) or "A Voyage to the Moon" (astronomy) and Wells's "The Food of the Gods" (hormones) or "The Story

of Davidson's Eyes" (fourth dimension). This seems to be the largest and most popular group.

(2) Novels based upon some scientific discovery or showing the influence of applied science upon society, such as Hergesheimer's "Three Black Pennys" (development of the iron industry).

(3) Stories in which some scientific fact or theory forms the theme, such as Arthur Reeve's detective stories and Rebecca West's "The Return of the Soldier" (Freudianism).

(4) Historical fiction where a distinguished man of science plays an important part, such as Merejkowski's "Romance of Leonardo da Vinci" and Guitry's play of Pasteur. This which would seem to be a fertile field for fiction has apparently been rather neglected.

I should be very much obliged if those who happen to know of good novels or worth while short stories of this sort would give me the titles and authors' names, also if convenient the publisher and the scientific motif.

EDWIN E. SLOSSON

SCIENCE SERVICE,
WASHINGTON

QUOTATIONS

THE WORK OF GENERAL GORGAS

ONE of the last acts of Congress before adjournment was to send to the President a bill to pay a monthly pension of \$150 to the widow of General William C. Gorgas, who died in London on July 4, 1920. In 1918 General Gorgas was placed on the retired list, having reached the age of 64. In the two years of life remaining to him his services were in great demand as an expert in sanitation. The Rockefeller Foundation made him director of the yellow fever work of its International Health Board. He visited Guayaquil to see what could be done to clean up that pest-hole. The government of Peru engaged him to carry out a sanitary program in that country. General Gorgas did not live long enough to earn the reward to which he was entitled as a renowned specialist in sanitation. His army pay had increased slowly as he rose from grade to grade. It was not until 1916, two years before he left